

**Abstract**

A method, apparatus and system for transferring heat is disclosed using a first gas adsorbent material, and a  
5 second gas adsorbent material that is relatively thermally isolated from but in continuous gas communication with the first material. In a first step the first material is heated so as to desorb a gas adsorbed onto the first material whereby the gas passes to and is adsorbed onto  
10 the second material. In a second step the first material is cooled in a manner so that the gas is desorbed from the second material and passes therefrom to be re-adsorbed onto the first adsorbent material. When the gas is desorbed from the second material, the second material is  
15 cooled thereby. In this way a hot gas stream can be used to cool another gas stream.